Amendments to the Specification:

Please replace paragraph [0047] with the following amended paragraph:

[0047] FIG. 1 is a side view of a portable apparatus for measuring a hydraulic feature according to an embodiment of the invention, shown assembled and positioned at a hydraulic feature site.

Please replace paragraph [0068] with the following amended paragraph:

[0068] Referring again to FIG. 1 and FIG. 2, the swing boom assembly 36 is adapted from a light-weight triangular truss 78, such as used for portable display structures, with a distal end 80 (shown in FIG. 1) and a proximal end 82. Upper leg 84 and lower legs 86 are interconnected with struts 88. In a preferred embodiment, truss 78 is comprised of multiple sections that are assembled in the field for portability. Triangular truss 78 can have different cross section dimensions depending on the application. In one embodiment the distance between legs 84, 86 is about 9 inches. In other embodiments, the distance between legs 84, 86 is about 6, 10, 12, or 14 inches. In a further embodiment, the outside diameter of legs 84, 86 is about one inch. In a still further embodiment, the outside diameter of legs 84, 86 is up to about two inches. In other embodiments, the cross section truss 78 is two legs or four legs. A split sleeve base 90, adapted to mate with the center tube 58, is welded to truss 78 near the proximal end 82. The split sleeve base 90 is made from angle iron, split pipe or other material adapted to articulate on center tube 58 and support a cantilevered boom. A concave split sleeve cap 92 is configured to mate with the split sleeve base 90 so that the truss 78 will articulate on center tube 58 on the

platform 52. One or more circular clamps 94, such as a hose clamp, secure the split sleeve cap 92 to the split sleeve base 90 around center tube 58. An index plate 96 is welded to leg 86 at the proximal end 82 of truss 78 and is configured to slide on horizontal plate 52 of tripod 50 as truss [[80]] 82 articulates. In a preferred embodiment, the horizontal plate 52 has reference markings and the index plate 96 has an indicator to align with the reference markings. A C-clamp 98 or other securing device is used to secure the index plate 96 to the horizontal plate 52 when the swing boom assembly 36 is oriented in a desired position.

Please replace paragraphs [0075] and [0076] with the following amended paragraphs:

[0075] FIG. 4 illustrates a side view of a preferred embodiment of another carriage assembly, designated here as 160. Carriage frame 162 is configured as a rectangular platform that is positioned below the lower legs 86 of truss 78 and supported with support wheels 164. Support wheels 164 are configured with concave contact surfaces and adapted to contact the two lower legs 86 on their upper and outside surface and without interference with struts 88. Carriage frame 162 does not enclose upper leg 84 and does not interfere with a support cable 68 coupled to upper leg 84 of truss 78, thus allowing multiple support cables 68 to be attached to upper leg 84. Further, carriage 160 can operate without interference when additional sections of horizontal truss 78 and additional support cables 68 are added. In another embodiment (not shown), carriage ~~from~~ frame 162 is adapted to accommodate trusses of different cross section dimensions and different diameters of legs.

[0076] Carriage frame 162 has support bracket 166 mounted on one side of carriage frame 162. Support bracket 166 has an upper end 168 and a lower end 170. An upper bushing 172 is mounted on upper end168 of support bracket 166

and a lower bushing 174 is mounted on lower end 170 of support bracket 166 and are configured to allow a measuring rod 180 to slide vertically. A friction brake 144 similar to that described previously in FIG. 3, is shown schematically configured to articulate on a vertical axis and is mounted on upper end 168 of support bracket 166 coupled to distal end 110 of brake cable 108. Distal end 102 of positioning rod 100 is shown here mounted on lower end 170 of support bracket 166. Pulley 142 for winch cable 124 is shown here mounted on lower end 170 of support bracket 166. Winch 122 (shown in FIG. 2) would be repositioned accordingly to a lower position on winch plate 120 at proximal end 82 of truss 78.

Please replace paragraph [0086] with the following amended paragraph:

[0086] Referring to FIG. 6 and FIG. 7, Index base 250 has a socket 264 at its center and a tapered roller bearing (not shown) in socket 264. A boom turntable 270 with a vertical spindle (not shown) is positioned in socket 264 and on the tapered roller bearing so it rotates freely. Turntable 270 is configured with an index pointer 272 and with reference apertures 274 adapted to align with the index apertures 260 in the index plate 250. In another embodiment, turntable ~~272~~ 270 is configured with a full-cover index plate (not shown) with reference apertures 274. Turntable 270 can be secured in a desired orientation by aligning a reference aperture 274 with a desired index aperture 260 and inserting a spring pin 276. A clamp may be used to provide additionally rigidity when using a full-cover plate.

Please replace paragraphs [0094] and [0095] with the following amended paragraphs:

[0094] A VMR positioning motor 340 is mounted on the underside of VMR platform 298 and drives a traction wheel 342 positioned adjacent the VMR aperture 302 in VMR platform 298. Traction wheel 342 is configured to maintain contact with VMR 216 (shown in FIG. 8) and move VMR 216 in both directions vertically. Traction wheel 342 serves as a brake to secure VMR 216 when in a desired elevation. VMR positioning motor 340 is configured to be controlled by a controller 212. In a further embodiment (not shown), traction wheel 342 is a pinion gear and VMR 216 is provided with a rack (linear gear teeth) to mate with the pinion gear. In another embodiment (not shown), a second VMR motor and traction wheel is adapted to ~~contact~~ rotate VMR 216 to change its orientation.

[0095] Referring back to FIG. 5, a controller 212, such as a laptop computer is connected to automated carriage 210 through radio or infrared connection 214 and is adapted to control drive motor 330, gimbal motors 336, 338 and VMR positioning motor 340. In another embodiment, controller 212 is also a data logger adapted to receives data signals from VMR sensors installed in VMR 216. Controller 212 may also be configured to receive operator input for calculating swing boom 224 orientation, and positioning automatic carriage 210 and VMR 216. In one embodiment, controller 212 receives orientation signals from a level indicator (not shown) mounted on the VMR platform 298. In another embodiment, connection 214, shown in FIG. 5, is wire or fiber optic cable. In a further embodiment, controller 212 is adapted to be waterproof. Power for automated carriage 210 is provided by battery packs (not shown in FIG. 9 for clarity) coupled to carriage frame 290. In another embodiment, power is provided to the automated carriage 210 through wires connected to a remote power source (not shown). In a still further embodiment, the components of

automated carriage 210 are adapted to be waterproof.

Please replace paragraph [0097] with the following amended paragraph:

[0097] FIG. 10 is a top view and FIG. 11 is a bottom view of another embodiment of an automated carriage generally designated as [[350]] 348. In this embodiment, carriage frame 290 support wheels 292 and drive wheels 306 are configured the same as carriage 210 shown in FIG. 8. VMR support frame 294 is mounted to one side of carriage frame 290. A gimbal frame 296 is mounted on VMR support frame 294 and a VMR platform 298 mounted on gimbal frame 296. A VMR support mast 300 is mounted on VMR platform 298 and oriented perpendicular to VMR platform 298. Spring loaded guide wheels 302 are shown mounted at the top of VMR mast 300 and configured to hold VMR 216 perpendicular to the VMR platform 296 and resist lateral forces on the VMR 216. Additional guide wheels 302 (not shown for clarity) are mounted at the base of VMR mast. A notch aperture 350 is positioned in aperture 304 in VMR platform 298 (see FIG. 11). A notch aperture 352 is aligned with notch aperture 350 and positioned in VMR support mast 300. A bow cable 354 is attached to MVR rod 216 at upper coupling 356 near top 320 of VMR rod 216 and at lower coupling 358 near lower end 322 of VMR rod 216. In one embodiment, upper and lower coupling 356, 358 are adjustable eyebolts in VMR rod 216. In another embodiment (not shown), upper and lower coupling 356, 358 are collars mounted in grooves in VMR 216 to allow rotation of VMR 216. A turnbuckle or other adjusting feature may be coupled with bow cable 354. A washer or similar object (not shown) may be mounted near either end of bow cable 354 as a vertical stop. In further embodiments, notch apertures 350, 352 are aligned in different orientations or are omitted. In a still further embodiment (not shown),

guide wheels for bow cable 354 are aligned with or replace notch apertures 350, 352.

Please replace paragraph [0099] with the following amended paragraph:

[0099] VMR support frame 294 extends horizontally to one side of carriage frame 290. VMR support frame 294 supports a two axis gimbal frame 296 on a pair of aligned bearings 332 (one not shown for clarity). Gimbal frame 296 supports VMR platform 298 on a pair of aligned bearings 334. A first gimbal bracket 360 is coupled to gimbal frame 296. First gimbal actuator 362 is mounted on carriage frame 290 and adapted to rotate gimbal frame 296 with respect to VMR support frame 296. A second bracket 364 is mounted on ~~gimbal frame 296~~ VMR platform 298. Second gimbal actuator 366 is mounted on ~~VMR platform 298~~ gimbal frame 296 and is adapted to rotate VMR platform 298 with respect to gimbal frame 296. In one embodiment, gimbal actuators ~~336, 338~~ 362, 366 are configured to be controlled by a controller 212 (described below).

Please replace paragraph [0101] with the following amended paragraph:

[00101] FIG. 12 illustrates an embodiment of a counter weight adjustment system 400 as part of an automated portable apparatus 200, similar to the embodiment shown previously in FIG. 5. Apparatus 200 is positioned on ground 18 with platform 206 supporting boom structure 208 and automated carriage 210 supporting VMR 216 on swing boom 224. ~~Struts 88 in boom structure 208 are omitted for clarity.~~ Counterweight boom 228 has a proximal end 410 and a distal end 412 with proximal end 410 coupled to the four way hub 222. Counterweight track 420 with a top end 422 and a lower end 424 is coupled vertically to distal

end 412 of counterweight boom 228. One or more support wires 230 are connected from the swing boom 224, through the top of mast 226, and <u>support wires 234 are connected from the top of mast 226</u> to the top end 422 of counterweight track 420. A counterweight carriage 426 is adapted to travel vertically on counterweight track 420 and has a securing device, such as a clamp (not shown), to hold counterweight carriage 426 at a desired elevation on counterweight track 420.

Please replace paragraph [0105] with the following amended paragraph:

[00105] It is contemplated that another embodiment of support carriage assembly 510 and support rod 512 would have some or all of the manual positioning features of carriage 160 and measuring rod 180 as previously described in FIG. 4. Additionally, support rod 512 could be configured to accommodate sensors or sampling equipment as previously described[[.]] in FIG. 4.